



DELAYED SPEECH IN TODDLER ASSOCIATED WITH INCREASE SCREEN TIME

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ABSTRACT

Increase incidence of delayed speech and derange neurodevelopment among toddler which is observed, associated with recent change in life style, urbanization, nuclear family and use of electronic gadgets like Smart Phone, Tablets and Laptops.

The children between 6 months to 2.5 years spent time using electronic gadgets and they were to experience speech delay.

Many disorders like Mental Retardation, Hearing Loss, Psychosocial Deprivation, Autism, Elective Mutism may be the cause of delayed speech. Physicians will make prompt diagnosis from History, Physical examination and performing Investigation. This early, timely detection and intervention will improve the outcome.[1] 20% percent of the children spent on average 28 minutes a day using screen, the study found every 30 minutes increase in daily screen time was linked to as 49% increase risk of expressive speech delay.[2]

KEY WORDS: Delayed Speech, Electronic Gadgets, Smart Phone, Nuclear Family, Toddler.

AIM OF STUDY:

To estimate the incidence of delayed speech associated with electronic gadgets among the children attending out Patient Department of Pediatrician in WEST BENGAL.

METHOD:

A prospective observational study that was conducted among the kids attending out Patient Department in private chamber for consultation in WEST BENGAL during December 2015 to December 2020. The children of 18 months to 30 months with delayed speech were included in this study. Daily mobile media used by the kids and the parents were calculated.

NORMAL SPEECH DEVELOPMENT:

TABLE 1

Information from SCHWARTZ, ER speech and language disorder.

| AGE | ACHIEVEMENT |
|-----------------|--|
| 1 to 6 months | coos in response to voice. |
| 6 to 9 months | babbling. |
| 10 to 11 months | Imitation of sounds, says "mama" or "dada" without meaning. |
| 12 months | Says "mama" or "dada" with meaning; often imitates 2 and 3 syllable words. |
| 13 to 15 months | Vocabulary of 10 words; some echolalia and extensive jargon; 20 to 25% of speech understood by strangers. |
| 19 to 21 months | Vocabulary of 20 words; 50% of speech understood by strangers. |
| 22 to 24 months | Vocabulary of >50 words, two word phrases dropping out of jargon. 60 to 90% of speech understood by strangers. |
| 2 to 2.5 years | Vocabulary of 400 words including names. 2 to 3 word phrases, use of pronouns, diminishing echolalia. 75% of speech understood by strangers. |
| 2.5 to 3 years | Use of plurals and past tenses knows sex and age and counts 3 objects correctly 3 to 5 words/sentences. 80 to 90% of speech understood by strangers. |
| 3 to 4 years | 3 to 6 words/sentences, ask questions, converse, relating experiences, tell stories, almost all speech understood by strangers. |
| 4 to 5 years | 6 to 8 words/sentences. Name 4 colors, count 10 pennies correctly. |

CAUSE OF DELAYED SPEECH:

- Mental Retardation.
- Hearing Loss.
- Maturation Delay.
- Expressive Language Disorder [Developmental Expressive Aphasia].
- Bilingualism.
- Psychosocial Deprivation.
- Autism.
- Elective Mutism.
- Receptive Aphasia.
- Cerebral Palsy. [C.P]

Almost 20% of 2 years old are thought to have delayed onset of language. Boys are nearly twice as likely to have identified speech impairment as girls. Ankyloglossia, an anatomical deformity where the tongue is connected to the floor of the mouth may cause speech impairment.

In toddler who cannot hear well or hear distorted speech is likely to have difficulty hearing word leading to delayed speech.

We learn to speak to get in on the conversation. It is hard to pick up in speech if no one engages with you. Lack of stimulation, psychosocial deprivation and use of electronic gadgets severely affect the speech development.

The speech and language problem are often seen with Autism. The other features of Autistic disorder are echolalia, repetitive behaviors, impaired verbal and non-verbal communication and social interaction.

Several neurological ailments like CP, Muscular Dystrophy, Traumatic Brain Injuries, Intellectual Disabilities are associated with impaired speech and language development.

CLINICAL EVALUATION:

Appropriate history and clinical examination are important in the evaluation of speech delay.

HISTORY:

A thorough developmental history with special attention to language milestone, family history and medical history is extremely important in marking the diagnosis. The family history of "Late Bloomers" is often present with maturation delay. The medical history should include Antenatal Maternal illness, Birth History, Asphyxia, gestational age at Birth, Birth Weight, Neonatal Sepsis, Neonatal Jaundice, Drug History, Psychosocial History, Language spoken to the child (Bilingualism) etc.

PHYSICAL EXAMINATION:

Anthropometric measurement and monitoring of head circumference is necessary. Any dysmorphic feature should be noted. Vision and hearing testing along with complete neurological examination to be performed.

• DIAGNOSTIC EVALUATION:

Audiometry should be done. Additional test to be suggested if indicated by the history, physical examinations like karyotype, DNA test for fragile "X" Syndrome, EEG.

RED FLAGS FOR SPEECH AND LANGUAGE DELAY

TABLE 2

Rudolph's Pediatrics 23rd edition [pg – 383]

| AGE | RECEPTIVE LANGUAGE | EXPRESSIVE LANGUAGE |
|-----------|--|--|
| 12 months | Does not respond to name does not gesture [wave, point]. | Does not babble. |
| 16 months | ----- | Does not use single word. |
| 18 months | Can't follow simple commands["give me", "come here"]. | Does not use at least 8 to 10 words. |
| 24 months | Does not follow a 2 step direction; cannot point to a picture. | Does not use any 2 word combination; speech is not at least 50% intelligible. |
| 30 months | ----- | Continues to use echolalia; continues to confuse pronouns. |
| 36 months | Cannot answer "who or what or where" questions. | Does not use 3 to 4 word sentence, speech is not 75% intelligible; leaves beginning or ending sounds of words. |

*Loss of speech, babbling or social skills is red flag at any age.

RESULT:

We tried to find out the incidence of delayed speech associated with the use of smart phone, tablets among the child presented at OPD during Dec' 2015 to Dec' 2020. It is found that 79% of the child with delayed speech is due to the use of electronic gadgets with Inadequate Linguistic Stimulation and Parent Absenteeism.

Other causes of delayed speech are Hypothyroidism [4%], Mental Retardation [8%], Autism [8%], Others [1%]. Fig. 1

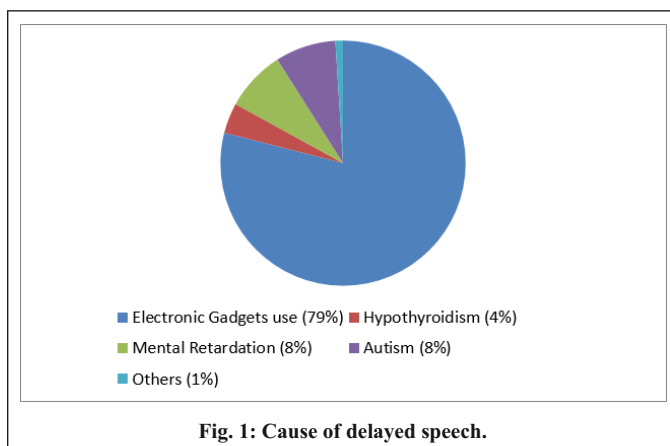


Fig. 1: Cause of delayed speech.

DISCUSSION:

Nuclear family and increase use of hand held electronics device, smart phone or tablets have significant association with delayed speech in 18 months to 30 months old children. In 18 months old children an increase of 30 minutes per day of mobile media use was associated with 2 to 3 times increase risk of parent reported expressive speech delay.[3] In early childhood increase viewing of television is associated with language delay.[4] Increase screen time to television, smart phone, tablets etc. reduce opportunities for parent – child interaction and play which is critical for early language development.[5] The American Academy of Pediatrics (AAP) recommended to discourage screen media in children <18 months and to avoid solo media use in children aged 18 to 24 months.[6] In case of nuclear family parents to get more time for their own work, they deliberately engage their kids with smart phone etc. The children learn and understand words or other concepts from real life interaction not from screen media. The language development will be better if the child hear the more complex language. The real life interactive stimulation, neuro exercise like – telling stories, singing songs, reading, having conversation with child are necessary for proper expressive language development. 80% of child's brain development occurs in the first 3 years of life. The consistent verbal and non verbal interaction between parent and children is important for this development. Thinking ability, social relationship, reading and writing are strongly linked to the speech and language development. Parents are extremely cautious and spend more time for their child's nutrition, vaccination but not for the language development, communication and

social development which is just as important as others. The children gain these skills through listening, talking, reading, singing and playing with their parents. The lack of knowledge, research data regarding the harmful effect of smart phone is silently hampering the language development, social communication skills development of our children. Among the top 10 unanswered research priorities the "Duration of Screen Time" is one of them for preventive child health.[7] Some parents are anxious that their child will miss out an update education if not permitted to use Internet and screen.[8] Some parents are worried that mobile media use as a source of distraction.[9] We tried to find out the association between smart phone use and delayed speech among toddler. Our study demonstrated that a 2.5 years old child with increase use of smart phone and electronic gadgets is associated with delayed speech and language development. The children are unable to transfer learning from media rather they do from face to face interaction.[10] Young children younger than 30 months will not able to learn language from screen exposure.[11] In one study it was demonstrated that working parents of nuclear family, parents want to engage their children with mobile or electronic gadgets to get time for their own work and parents also use mobile device leading to decrease parent child interaction leading to delayed speech as we find in our study.[12] Outcome of our study also similarise with previous studies reporting delayed speech in children with increase television screen time.[13] It is also seen that increase use of electronic gadgets reduce sleep in toddlers which may adversely affect the child development.[14] It is observed that infant or children from high income, nuclear family have poorer outcome. The children with low income family have limited scope of use of smart phone and non nuclear family children have increased opportunities to interact face to face with family members. The social communication including the gesture will predict vocabulary skills of the children. [15]

LIMITATION OF OUR STUDY:

Limitations of our study are small sample size, scarcely of scientific data, under estimated of any mobile media device use etc.

CONCLUSION:

The outcome of our study shows a significant association between delayed speech and use of smart phone and electronic gadgets. The risk factors of increase engagement with electronic media are high income, nuclear family and false perceptions that smart phone will make the children smarter. The awareness of parents and further study to explore the mechanism of delayed speech and smart phone maybe necessary to counteract the situation.

Conflict of Interest: None.

REFERENCES:

- I. Evaluation and management of the child with Speech Delay., Alexander K.C. Leung, M.B.B.S. Alberta Children's Hospital and University of Calgary, Alberta, Canada et al. Am Fam Physician. 1999, Jun 1; 59(11): 3121 – 3128.
- II. Child smart phone and tablet usage linked to speech delay in toddlers., Olivia Blair /@livblair/ Friday 05th May 2017.
- III. Mobile Media Device use is associated with Expressive Language Delay in 18 months children., Meta van den Heuvel, MB, PHD, Julia MA, MPH, et al. Journal of Developmental and Behavioral Pediatrics. 2019 February to March; 40(2): 99 – 104.
- IV. Christakis DA, Gilkerson J, Richards J. et al., Audible Television and Decreased Adult Words, Infant Vocalizations, and Conversational Turns. [Pub Med] [Google Scholar].
- V. Courage ML & Howe ML. To watch or not to watch: Infants and toddlers in a brave new electronic world. Developmental Review 2010; 30(2): 101 – 115 [Google Scholar].
- VI. American Academy of Pediatric Council on Communication and Media. Media and young minds. Pediatrics, Nov. 2016; 138(5) e20162591 [Pub Med] [Google Scholar].
- VII. Mikael Lavigne, Catherine S Briken, Jonathan L Maguire, et al. Priority Setting in Pediatric Preventive Care Research. Arch Dis Child. 2017 Aug; 102(8): 748 – 753 [Pub Med] [Google Scholar].
- VIII. Jenny S. Radesky, Staci Eisenberg, Jamie Gross et al. Over stimulated consumers or next - generation learners? Parent tending about child mobile technology use, Ann Fam Med. Nov 2016; 14; 503 – 508 [PMC free article] [Pub Med] [Google Scholar].
- IX. Kildare CA. Middlemiss W. Impact of Parents mobile device use on parent - child interaction; a literature review. Computers in Human Behavior. Oct 2017; 75: 579 – 593.
- X. Barr R. Memory Constraints on infant learning from picture books, television and touch screens. Child Developmental Perspective. Aug 2013; 7(4): 205 – 210. [Google Scholar].
- XI. Powers S, Li JM. Media and technology in the lives of infants and toddlers. Zero to Three. 2013; 33: 11 – 16 [Google Scholar].
- XII. Kildare CA. Middlemiss W. Impact of parents mobile device use on parent - child interaction: a literature review. Computer Human Behavior. 2017; 75: 579 – 593. [Google Scholar].
- XIII. Zimmerman F, Christakis D, Meltzoff AN. Associations between media viewing and language development in children under 2 years. J Pediatrics. 2007 Oct; 151(4): 364 – 368 [Pub Med] [Google Scholar].
- XIV. Cheung CHM, Bedford r, Rachel Bedford et al. Daily touch screen use in infants and toddlers is associated with reduced sleep and delayed sleep onset. Sci Rep. 2017; 7: 1 – 7 [PMC free article] [Pub Med] [Google Scholar].

- XV. Laura J Kuhn, Michael T Willoughby, Wilbourn M et al. Early communication gestures prospectively predict language development and executive function in childhood. *Child Dev.* Sep–Oct 2014; 85(5): 1898 – 1914 [PMC free article] [Pub Med] [Google Scholar].